was only occasionally broken by the lightning, which flashed in every direction, while the air was rent with loud and reiterated explosions like the discharges of artillery, which accompanied each eruption of volcanic matter, and conspired to strike the deepest terror, and to spread among the inhabitants a universal panic that the day of judgement was arrived. On the 24th the atmosphere became clearer, and the houses were found covered to the depth of eight inches with ashes, in which many small birds were found suffocated. Deer and other wild animals flew to the town for refuge, and the banks of the neighbouring streams were strewed with dead fish. In Segovia, and as far as eight leagues from the volcano, the showers of black sand were so abundant as to destroy thousands of cattle; and many were subsequently found whose bodies exhibited one mass of scorched flesh.

Within the Bay of Fonseca, and two miles from the volcano, it is stated that two islands, from two to three hundred yards in diameter, were thrown up, probably from the deposit of masses of scoriæ on previously existing shoals.

It was resolved unanimously:—"That the thanks of this Society be given to their Secretary Peter Mark Roget, Doctor of Medicine, for the zeal and ability which he has uniformly displayed, and the many valuable services he has rendered in promoting its objects."

January 14, 1836.

FRANCIS BAILY, Esq., V.P., and Treasurer in the Chair.

Dr. Daubeny's paper entitled, "On the action of Light upon Plants, and of Plants upon the Atmosphere," was resumed and concluded.

The objects of the experimental inquiries of which the author gives an account in this paper were, in the first place, to ascertain the extent of the influence of solar light in causing the leaves of plants to emit oxygen gas, and to decompose carbonic acid, when the plants were either immersed in water, or surrounded by atmospheric air. The plants subjected to the former mode of trial were *Brassica oleracea*, *Salicornia herbacea*, *Fucus digitatus*, *Tussilago hybrida*, *Cochlearia armorica*, *Mentha viridis*, *Rheum rhaponticum*, *Allium ursinum*, and several species of *Gramineæ*. Geraniums were the only plants subjected to experiment while surrounded with atmospheric air. Comparative trials were made of the action on these plants of various kinds of coloured light, transmitted through tinted glass, of which the relative calorific, illuminating, and chemical powers had been previously ascertained; and the results of all the experiments are recorded in tables; but no general conclusion is deduced from them by the author. He next describes a few experiments which he made on beans, with a view to ascertain the influence of light on the secretion of the green matter of the leaves, or rather to deter-

mine whether the change of colour in the chromule is to be ascribed to this agent. The third object of his inquiries was the source of the irritability of the *Mimosa pudica*, from which it appeared that light of a certain intensity is necessary for the maintenance of the healthy functions of this plant, and that when subjected to the action of the less luminous rays, notwithstanding their chemical influence, the plant lost its irritability quite as soon as when light was altogether excluded. He then examines the action of light in causing exhalation of moisture from the leaves; selecting Dahlias, Helianthuses, Tree Mallows, &c., as the subjects of experiment. The general tendency of the results obtained in this series is to show that the exhalation is, *cæteris paribus*, most abundant in proportion to the intensity of the light received by the plant. He also made various comparative trials of the quantity of water absorbed, under different circumstances, by the roots of plants, and chiefly of the *Helianthus annuus*, *Sagittaria sagittifolia*, and the *Vine*. From the general tenor of the results of these and the preceding experiments, he is inclined to infer that both the exhalation and the absorption of moisture in plants, as far as they depend on the influence of light, are affected in the greatest degree by the most luminous rays; that all the functions of the vegetable economy which are owing to the presence of this agent, follow, in this respect, the same law; and that in the vegetable, as well as in the animal kingdom, light acts in the character of a specific stimulus. The author found that the most intense artificial light that he could obtain from incandescent lime produced no sensible effect on plants.

The latter part of the paper is occupied by details of the experiments which the author made with a view to ascertain the action of plants upon the atmosphere, and more especially to determine the proportion that exists between the effects attributable to their action during the night and during the day; and also the proportion between the carbonic acid absorbed, and the oxygen evolved.

His experiments appear to show that at least 18 per cent. of oxygen may be added to the air confined in a jar by the influence of a plant contained within it. He also infers that the stage of vegetable life at which the function of purifying the air ceases, is that in which leaves cease to exist. The author shows that this function is performed both in dicotyledonous and in monocotyledonous plants, in evergreens as well as in those that are deciduous, in terrestrial and in aquatic plants, in the green parts of eculents as well as in ordinary leaves, in Algæ and in Ferns as well as in Phanerogamous families. Professor Marcet has shown that it does not take place in Fungi.

The reading of a paper, entitled, "On the Anatomical and Optical Structure of the Crystalline Lenses of Animals, being the continuation of the paper published in the Philosophical Transactions for 1833." By Sir David Brewster, K.H., LL.D., F.R.S.,—was commenced.